

GENETICS OF THE RINGNECK DOVE, Streptopelia risoria. II. Description of mutants-Albino, autosomal recessive = al.

by
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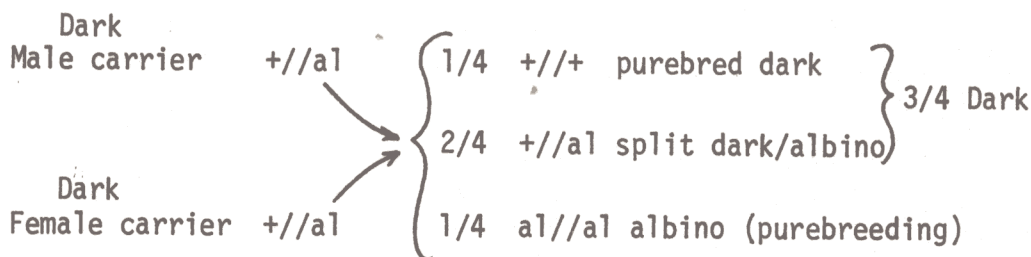
This color originally occurred in Japan. It was described by Tange, 1932, 1949. Dr. Hollander and I imported it in 1967 from Dr. Takao Kashiwabara, Dept. of Animal Husbandry, Fac. of Agric. Ibaraki University, Tsuchiura, Japan. He sent us 3 males and 3 females, but evidently they were so inbred that they failed to produce a purebred strain. Only after outcrosses with our ringnecks did we reextract the albino with high fertility. This was the source of my J strain of birds (still going) and all albino ringnecks in the U.S., so far as I know.

By definition, albino is the absence of melanin. In some species other pigments such as xanthophylls or carotenoids are present. An albino red-winged black bird, for example, could have red and yellow epaulets. But in the ringneck dove and domestic pigeon also, feather and eye pigments are only melanin, so they are white with pink eyes.

The albino squab when first hatched is difficult to distinguish from white, or even from the ivory-rosy = cream combination.

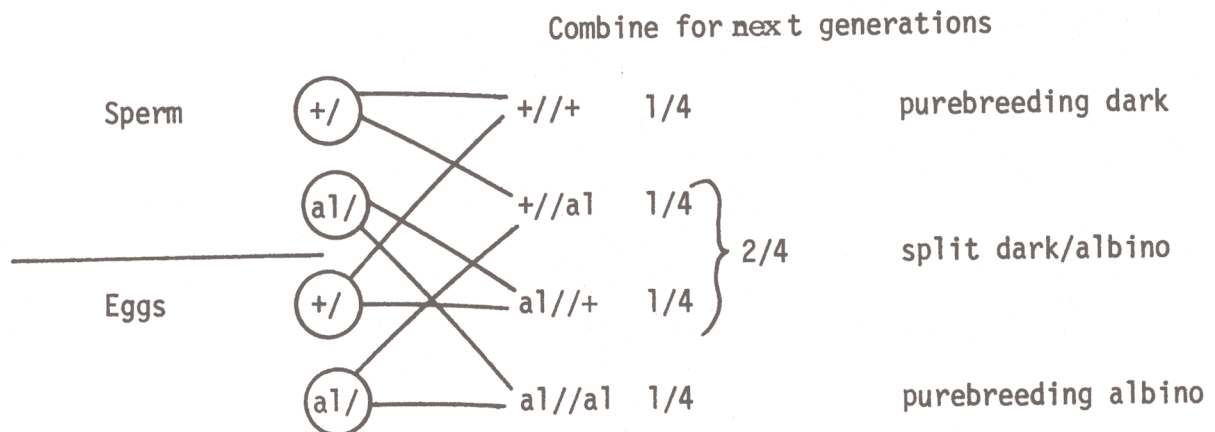
My studies confirm Tange's results that albino is a regular (autosomal) recessive in inheritance. My evidence is presented in table 1. Note that I classified 1,905 squabs for albinism. A statistically significant excess (less than $P = .05$) of albino progeny occurs twice among 10 kinds of matings. Chance with small numbers is probably the explanation for the first of these (Probability = $P = .04$). I have no explanation for the second which has larger numbers ($P = .017$).

Doves that are "split" = "carriers" of albino (heterozygotes in genetic terms) may have some albino offspring, if both parents are carriers. In fact, on the average, 1/4 of the offspring would be albino. If we use al to = the albino gene and + to = the alternative normal gene (allele), it can be diagrammed like the figures below. (Some persons may prefer just "a" for the albino gene symbol, or c = colorless used in some other species. Also remember that an individual has 2 genes for any one character, but sperm or eggs have only one.)

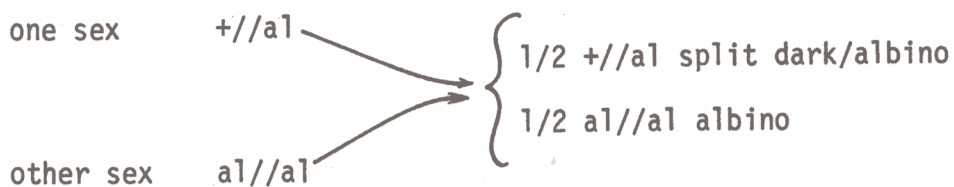


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Another way of looking at it is through the gametes (sperm and egg).



Of course, if the albino were in a testcross, the useful kind of backcross, we could diagram it as:



INTERACTIONS - Albino combined with any color hides (= is epistatic to) that color. So one could substitute blond or rosy or ivory for the dark color and get the same kind of results in the diagrams.

Albinos certainly can't see as well as normal birds. They don't like really bright light. If kept outdoors, they are likely to develop eye problems sooner than other types might. The main difficulty, however, is with squabs. In common with whites and combined mutants like creams whose eye pigment is slower to develop than other types, they are less able to find food and water readily. The fancier needs to recognize thirst and hunger and assist the squabs for 1-2-3 days. Of course, other colored squabs may have water and food problems, but, in frequency of needs, albinos are often the most helpless. Once adapted to the food and water cups, they do very well for themselves.

Tange, M. 1932 Unexpected occurrence of albino individuals in the offspring of blond ring doves, Streptopelia risoria. (In Japanese with an English resume). Japanese Jour. Genetics, 8: 1-18.

Tange, M. 1949 Further data on the crossing of albino ring doves with white ones. Journal Fac. Agric. Kyūshū University 9: 127-142.

Table 1. Family data for the inheritance of albino color in ringneck doves, Streptopelia risoria (douraca source).

Type of mating	Expected ratio	Number of matings	Sex that is albino	Sex segregating	Number of offspring		Total	X ²	P
					Normal	non-albino			
Purebred of extracted albinos	0:1	10	both	-	0	101	101	.	.
First crosses	1:0	29	{ 9 ♀ 20 ♂	-	245	.	245	.	.
Species hybrids [†]	1:0	13	{ 5 ♀ 8 ♂	-	125	.	125	.	.
Subtotal		42			370		370		
Testercrosses	1:1	16	♀	♂	120	104	224	1.14	.28
	1:1	36	♂	♀	250	231	481	.75	.34
Subtotal	1:1	52			370	335	705	1.74	.18
<u>humilis</u> hybrids [†]	1:1	5	♀	♂	25	42	67	4.31*	.04
	1:1	13	♂	♀	124	109	233	.97	.31
Subtotal	1:1	18			149	151	300	.01	.98
DNA Transformation Families	1:1	5	♂	♀	22	17	39	.64	.42
1:1 Subtotal		75			541	503	1044	1.38	.25
F ₂ J-risoria <u>humilis</u> hybrids	3:1	23	.	both	235	104	339	5.83*	.017
Subtotal	3:1	26		both	42	9	51	1.47	.23
Grand total		153			1188	717	1905		

[†]The species hybrids are between S. risoria and S. humilis with (usually) several backcrosses to risoria, but often mated inter se as well.